

R E M A R K S

The Office Action enclosed copies of the INFORMATION DISCLOSURE STATEMENTS BY APPLICANT Form PTO-1449 dated May 25, 2001, Form PTO-1449 dated June 11, 2001 and Forms PTO/SB/08A and PTO/SB/08B dated August 2, 2002 with the Examiner's initials in the left column next to each cited publication (except for JP 63-247656 in the May 25, 2001 Form PTO-1449).

On the copy of the May 25, 2001 Form PTO-1449 that was enclosed with the Office Action, the Examiner drew a line across JP 63-247656 and wrote "not present in application". It is respectfully requested that JP 63-247656 be considered and made of record, since JP 63-247656 was cited in the International Search Report that was enclosed with the INFORMATION DISCLOSURE STATEMENT filed on May 25, 2001.

The Examiner is thus requested to provide another copy of the Form PTO-1449 dated May 25, 2001 with the Examiner's initials in the left column next to each cited publication, including JP 63-247656.

Applicants are pleased to note that claims 3 and 6 to 14 were considered to be allowable for the reasons set forth in Item No. 4 on page 3 of the Office Action.

New claims 15 and 16 are supported by the paragraph bridging pages 8 and 9 of the specification.

New claims 17 to 19 are supported on page 14 of the specification.

As recited in claim 1, the presently claimed invention concerns a method for quantitatively determining hydrogen sulfide or sulfide ions, which comprises adding to a sample containing hydrogen sulfide or sulfide ions, metal ions or a compound which liberates the metal ions and a metal indicator which reacts with the metal ions and resultingly undergoes color development, wherein the color development is accelerated or inhibited by the hydrogen sulfide or sulfide ions; and measuring the degree of color development of the metal indicator.

As recited in claim 4, the presently claimed invention is also directed to a method for quantitatively determining a specific substance, which comprises adding to a sample containing a specific substance, a component which acts on the specific substance so that the specific substance forms hydrogen sulfide or sulfide ions, metal ions or a compound which liberates the metal ions, and a metal indicator which reacts with the metal ions and resultingly undergoes color development, wherein the

color development is accelerated or inhibited by the hydrogen sulfide or sulfide ions; and measuring the degree of color development of said metal indicator.

Claims 1, 2, 4 and 5 were rejected under 35 USC 102 as being anticipated by Dabovic USP 6,107,100 for the reasons set forth in Item No. 2 on page 2 of the Office Action.

The presently claimed invention relates to the quantitative determination of hydrogen sulfide and/or sulfide ions, in terms of the object to be measured, and is thus distinguished from Dabovic (USP 6,107,100) which describes a method for quantitatively determining a thiol-containing analyte.

The following was alleged at the bottom of page 2 of the Office Action:

"This step will facilitate the formation of sulfide ions. Col. 5, lines 41-47, explicitly details measuring thiol formation (contains sulfide ions) by combining zinc and nitroprusside with a homocysteine sample and noting a degree of color formation."

Applicants respectfully rebut the above position as set forth in the Office Action for the following reasons.

The Office Action did not establish that Dabovic teaches that hydrogen sulfide and/or sulfide ions are quantitatively

liberated from a sulfur-containing analyte, as is evident from the assays in the EXAMPLES of Dabovic. Stated differently, while Dabovic describes a phenomenon involving "a combination of water insoluble, basic Zn-compounds, Na-nitroprusside and thiol or reduced disulfide develop a stable and intense color that can be detected at very low concentrations" and a method for quantitatively determining a thiol-containing analyte, such as homocysteine, because of its lack of disclosure with respect to the mechanism in which said phenomenon lies, Dabovic does not teach or suggest that the color development in his method could be applicable to a method for the quantitative determination of hydrogen sulfide and/or sulfide ions. In fact, it is doubtful whether the Dabovic method can be used for the quantitative determination of  $\text{Na}_2\text{S}$ , as seen in the result of Photo 7 Spot 8 of Dabovic, where  $\text{Na}_2\text{S}$  does not seem to develop any color.

Other than the fundamental differences between Dabovic and the presently claimed invention as discussed above, the presently claimed invention and Dabovic are also considerably different in terms of mode of measurement. In the EXAMPLES of Dabovic, the increasing intensity of color development is measured in proportion to the concentration of an analyte. In contrast to Dabovic, in one embodiment of the present invention, by use of a

zinc ion as a metal ("inhibiting method" of the present invention), the decrease of color development, in a process wherein hydrogen sulfide and/or sulfide ions inhibit the color development reaction (see applicants' EXAMPLE 1 on pages 18 to 20 of the specification), is determined.

Applicants' method provides for the measurement of the concentration of  $\text{Na}_2\text{S}$  quantitatively, both with an "inhibiting method" and an "accelerating method, as seen from their EXAMPLES 1 and 2, respectively.


Withdrawal of the rejection of claims over Dabovic is therefore respectfully requested.

Reconsideration is requested. Allowance is solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

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Respectfully submitted,



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